

REMARKS

Claims 1-21 were examined. Claims 1-2, 4, 12-13 and 15 are amended. Claims 1-21 remain in the Application.

In an Office Action dated May 4, 2007, the Patent Office rejected claims 1-21 under 35 U.S.C. §103(a). Reconsideration of the pending claims is respectfully requested in view of the above amendments and the following remarks.

A. 35 U.S.C. §103(a): Rejection of Claims 1, 6, 9, 11-12, 19 & 21

The Patent Office rejects claims 1, 6, 9, 11-12, 19 and 21 under 35 U.S.C. §103(a) as obvious over U.S. Patent Publication No. 2002/0181072 of Cook (Cook). Cook discloses a single crystal photoreactive material of doped lithium niobate (LiNbO_3) in an optical body and a method involving photoreactive material including a first material such as doped lithium niobate in a couplant material comprising a glass or polymer. Cook does not disclose aligning domains in the polymer in, for example, a lithium niobate/polymer composition. The Patent Office points to paragraphs [0001], [0002] and [0077] in Cook for this proposition, but these paragraphs do not distinguish between a polymer and a particle in the polymer. It is reasonable therefore to conclude from Cook, since it discusses lithium niobate, that the referenced paragraphs apply at best to particles in a polymer.

Claims 1, 6, 9 and 11 are not obvious over Cook, because Cook does not describe or provide any motivation or predictability for heating a ferroelectric polymer comprising polymer material; aligning a plurality of domains of the polymer material; and cooling a temperature of the polymer material while maintaining the alignment of the domains of the polymer material. Cook describes aligning doped lithium niobate particles. Lithium niobate is not a polymer material. Further, Cook does not describe aligning a plurality of domains of a polymer material. Cook aligns lithium niobate. In an embodiment, lithium niobate is combined with a couplant material that may be a polymer. Nevertheless, it is the lithium niobate, not the polymer material that is aligned.

Claims 12, 19 and 21 are not anticipated by Cook, because Cook does not describe heating a polymer comprising a polymer material; applying an electric field to the polymer material to align a plurality of domains of the polymer material in a direction relative to a surface of the substrate; and cooling the temperature of the polymer while maintaining application of the electric field to the polymer material. As noted above, Cook discloses aligning doped lithium niobate, not a polymer material.

For the above stated reasons, Applicants respectfully request that the Patent Office withdraw the rejection to claims 1, 6, 9, 11-12, 19 and 21 under 35 U.S.C. §103(a).

B. 35 U.S.C. §103(a): Rejection of Claims 2, 4, 7-8, 13, 15, 17 & 18

The Patent Office rejects claims 2, 4, 7-8, 13, 15, 17 and 18 under 35 U.S.C. §103(a) as obvious over Cook in view of U.S. Patent No. 3,490,050 of Weiner (Weiner). Weiner is cited for disclosing an apparatus to use an electric field to align particles.

Claims 2, 4, 7 and 8 depend from claim 1 and claims 13, 15, 17 and 18 depend from claim 12. As noted above with respect to independent claim 1 and independent claim 12, Cook does not disclose a method wherein a polymer material of a polymer is heated to align a plurality of domains of the polymer material. Weiner does not cure the defects of Cook. Accordingly, claims 2, 4, 7-8, 13, 15, 17 and 18 are not obvious under 35 U.S.C. §103(a) over Cook in view of Weiner.

C. 35 U.S.C. §103(a): Rejection of Claims 3, 10, 14 & 20

The Patent Office rejects claims 3, 10, 14 and 20 under 35 U.S.C. §103(a) as obvious over Cook in view of U.S. Patent Publication No. 2004/0131862 of Szmanda et al. (Szmanda). Szmanda is cited for disclosing a polymer material comprising poly(vinylidene fluoride-trifluoroethylene).

Claims 3 and 10 depend from claim 1 and claims 14 and 20 depend from claim 12. As noted above with respect to claims 1 and 12, Cook does not disclose a method involving heating a polymer material and aligning a plurality of domain of a polymer material. Instead, Cook teaches a doped lithium niobate material. Cook recognizes polymer-based materials. See

paragraph [0034]. Nevertheless, Cook prefers doped lithium niobate materials presumably because a high voltage electric field can be developed. See paragraph [0084]. Therefore, Cook teaches away from using polymer materials. Accordingly, there is no motivation to combine Cook and Szmanda to substitute a ferroelectric polymer material such as poly(vinylidene fluoride-trifluoroethylene) for the doped lithium niobate material of Cook and to align domains of the polymer material.

For the above stated reasons, Applicants respectfully request that the Patent Office withdraw the rejection to claims 3, 10, 14 and 20.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

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I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below to the United States Patent and Trademark Office.

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